

REMARKS

I. Introduction

By the present Amendment, claims 1, 2, 5, 6, 14-16, and 19-21 have been amended. No claims have been added or canceled. Accordingly, claims 1-21 remain pending in the application. Claims 1, 2, 14-16, 20 and 21 are independent.

II. Office Action Summary

In the Office Action of October 13, 2005, claims 1-3, 10, 15-17, and 20 were rejected under 35 USC §102(b) as being anticipated by U.S. Patent No. 6,800,859 issued to Shishido et al. ("Shishido"). Claims 14 and 21 were rejected under 35 USC §102(b) as being anticipated by U.S. Patent No. 6,621,571 issued to Maeda et al. ("Maeda"). Claims 4-9, 18, and 19 were rejected under 35 USC §103(a) as being unpatentable over Shishido in view of U.S. Patent No. 5,479,252 issued to Worster et al. ("Worster"). Claims 11-13 were rejected under 35 USC §103(a) as being unpatentable over Shishido in view of Maeda. These rejections are respectfully traversed.

III. Rejections under 35 USC §102

Claims 1-3, 10, 15-17, and 20 were rejected under 35 USC §102(b) as being anticipated by Shishido. Regarding this rejection, the Office Action alleges that Shishido discloses a pattern defect inspection apparatus that comprises all of the elements recited in, for example, independent claim 1. In particular, the Office Action notes that Shishido discloses a quantity of light adjusting unit that adjusts the quantity of the ultraviolet laser light emitted from the laser light source in accordance with the inspection recipe. Applicants, however, contend that the present claims (as

amended) recite features and elements that are not shown or suggested by the art of record.

As amended, independent claim 1 defines a pattern defect inspection apparatus that comprises, in relevant part:

- a recipe setting unit for setting an inspection recipe and/or a review recipe;

- an illumination optical system including:

- a laser light source for emitting ultraviolet laser light;

- a shutter for selectively restricting passage of the ultraviolet laser light emitted from the laser light source;

- a quantity-of-light adjusting unit for adjusting a quantity of the ultraviolet laser light emitted from the laser light source in accordance with the inspection recipe and/or the review recipe set by the recipe setting unit;

- an illumination range forming unit for forming on a sample an illumination range of the ultraviolet laser light whose quantity has been adjusted by the quantity-of-light adjusting unit;

According to independent claim 1, the pattern defect inspection apparatus includes a recipe setting unit which sets and/or reviews inspection recipes. An illumination optical system is provided which includes, in part, a laser light source, a shutter, and a quantity of light adjusting unit. The laser light source is used to emit ultraviolet laser light. The shutter is positioned such that it is capable of selectively restricting (and facilitating passage) of the ultraviolet laser light emitted from the laser light source. The quantity of light adjusting unit is used for adjusting the amount of ultraviolet laser light emitted from the laser light source in accordance with the appropriate inspection and/or review recipe set by the recipe-setting unit.

As discussed in the Specification, such an embodiment allows the shutter to control the optical path of the ultraviolet laser light by operating an on or off state

wherein the ultraviolet laser light is allowed to pass, or not pass, respectively. See page 59, lines 20 – page 61, line 17. At least one benefit achieved by providing the shutter to control the ultraviolet laser light is reduction and/or prevention of damage to the sample because the sample will not be excessively irradiated by the laser light. See page 17, line 10 – page 18, line 2.

While the Office Action asserts that Shishido discloses all of the features recited in independent claim 1, Applicants' review of this reference has failed to reveal any disclosure for a shutter as recited in amended claim 1. More particularly, Shishido fails to disclose "a shutter for selectively restricting passage of the ultraviolet laser light emitted from the laser light source."

It is therefore respectfully submitted that, as amended, independent claim 1 is allowable over the art of record.

Claims 3-13 depend, either directly or indirectly, from independent claim 1, and are therefore believed allowable for at least the reasons set forth above with respect to independent claim 1. In addition, these claims each introduce novel elements that independently render them patentable over the art of record.

Independent claim 2 defines a pattern defect inspection apparatus that includes limitations similar to those recited in independent claim 1. For example, the illumination optical system provided in independent claim 2 includes a shutter for selectively restricting passage of the ultraviolet laser light emitted from the laser light source.

As previously discussed with respect to independent claim 1, this particular feature is not disclosed by Shishido.

It is therefore respectfully submitted that independent claim 2 is allowable over the art of record.

Independent claims 15, 16, and 20 each define pattern defect inspection methods. Additionally, each of these claims recites a step of "opening a shutter to allow passage of ultraviolet laser light emitted from a laser light source," as well as a step of "closing the shutter after the reflected light image has been imaged by the detector." As previously discussed with respect to independent claim 1, Shishido does not provide any disclosure of such a shutter. Consequently, it is not possible for Shishido to perform these particular steps.

It is therefore respectfully submitted that independent claims 15 and 16 are allowable over the art of record.

Claims 17 and 21 depend from independent claims 15 and 20, respectively, and are therefore believed allowable for at least the reasons set forth above with respect to independent claim 15. In addition, these claims each introduce novel elements that independently render them patentable over the art of record.

Claims 14 and 21 were rejected under 35 USC §102(b) as being anticipated by Maeda. The Office Action asserts that Maeda discloses all of the features recited in these claims. Applicants respectfully submit, however, that the features recited in independent claims 14 and 21 (as amended) are not disclosed by Maeda.

As amended, independent claim 14 defines a pattern defect inspection apparatus that comprises, in relevant part:

- a laser light source for emitting laser light;
- a shutter for selectively restricting passage of the ultraviolet laser light emitted from the laser light source;
- an illumination optical system for reducing coherence of the laser light emitted from the laser light source before irradiating a sample with the laser light;

Independent claim 21 discloses a pattern defect inspection method that comprises the steps:

- opening a shutter to allow passage of ultraviolet laser light emitted from a laser light source;
- irradiating a wafer having a diameter of 300 mm with ultraviolet laser light whose coherence has been reduced;
- imaging the irradiated wafer to detect an image of the wafer;
- closing the shutter after the reflected light image has been imaged by the detector; and
- handling the detected image of the wafer to detect a defect having a size of 100 nm or less in a pattern formed on the wafer with a throughput of three pieces of wafers or more per hour.

Applicants' review of Maeda has not revealed any disclosure for a shutter capable of selectively restricting passage of ultraviolet laser light as recited in independent claim 14. Further, since such a shutter is not provided by Maeda, it is not possible for Maeda to disclose the steps of opening and shutting the shutter.

It is therefore respectfully submitted that independent claims 14 and 21 are allowable over the art of record.

Claims 4-9, 18, and 19 were rejected under 35 USC §103(a) as being unpatentable over Shishido in view of Worster. As previously discussed, Shishido fails to disclose features that are recited in independent claims 1 and 15, from which claims 4-9, 18, and 19 depend. Furthermore, the features not disclosed by Shishido are also not disclosed or suggested by Worster.

Accordingly, claims 4-9, 18, and 19 are believed to be allowable for at least the reasons set forth above with respect to independent claims 1 and 15.

Claims 11-13 were rejected under 35 USC §103(a) as being unpatentable over Shishido in view of Maeda. Claims 11-13 depend from independent claim 1, and are believed to be allowable for at least the reasons set forth above with respect

to independent claim 1. Furthermore, as previously discussed, Shishido and Maeda both fail to disclose or suggest features that are recited in independent claim 1. Consequently, the combination of these two references would still fail to recite the features set forth in the base claim as required by the MPEP to sustain a §103 rejection.

It is therefore respectfully submitted that claims 11-13 are allowable over the art of record.

IV. Conclusion

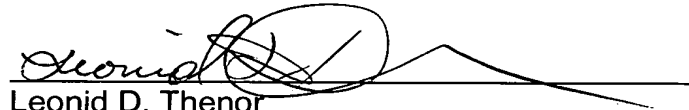
For the reasons stated above, it is respectfully submitted that all of the pending claims are now in condition for allowance. Therefore, the issuance of a Notice of Allowance is believed in order, and courteously solicited.

If the Examiner believes that there are any matters which can be resolved by way of either a personal or telephone interview, the Examiner is invited to contact Applicants' undersigned attorney at the number indicated below.

AUTHORIZATION

Applicants request any shortage or excess in fees in connection with the filing of this paper, including extension of time fees, and for which no other form of payment is offered, be charged or credited to Deposit Account No. 01-2135 (Case: 520.43429X00).

Respectfully submitted,
ANTONELLI, TERRY, STOUT & KRAUS, LLP.


Leonid D. Thenor
Registration No. 39,397

LDT/vwr
1300 N. Seventeenth Street
Suite 1800
Arlington, Virginia 22209
Tel: 703-312-6600
Fax: 703-312-6666

Dated: February 13, 2006